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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/925,838	08/08/2001	Andrew John Stentz	PH01-01-02	3872

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EXAMINER

HUGHES, DEANDRA M

ART UNIT	PAPER NUMBER
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3663

DATE MAILED: 11/21/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/925,838

Applicant(s)

STENTZ, ANDREW JOHN

Examiner

Deandra M Hughes

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 May 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 May 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Drawings

1. Figures 1-3 and 5 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.
2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the reference sign(s) mentioned in the description. *In particular, please see applicant's disclosure paragraph 0037, pg. 9. The current identifications (I_{po} , I_{pi} , etc.) are not identified in figure 7.* A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claim 8 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 8 depends on claim 8. In this office action, the Examiner will assume that applicant meant for claim 8 to depend on claim 7 and will examine claim 8 accordingly.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

5. Claims 1-3, 5-10, 12-13, 18-19, and 33-35 are rejected under 35 U.S.C. 102(e) as being anticipated by Drake (US 6,377,394).

** The reference numbers and lines identified in this office action are intended to assist the applicant and in no way are intended to be limiting. The prior art reference should be read in its entirety.

Drake discloses the following.

With regard to claim 1, Drake discloses:

- generating a first control signal (circuit 24 generates signal based on input detected by 16) based on a feed-forward error signal (col. 4, lines 36-40) and a second control signal (circuit 24 via photo-diode 160) based on the feedback error signal (col. 4, lines 24-25) ;
- adjusting the pump source in accordance with the control signals (26, p₁, p₂, p₃ and col. 4, lines 31-34).

With regard to claim 9, Drake discloses:

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- an erbium (rare-earth) doped fiber (10, 12) for imparting gain to an optical signal propagating there-through;
- a pump source for supplying pump power (p_1 , p_2 , p_3) to the erbium doped fiber;
- a first optical power monitoring device (160) for receiving a portion of output power generated by the rare-earth doped fiber and converting said portion of an output power to a first control signal;
- a second optical power monitoring device (16) for receiving a portion of the input optical signal and converting said portion of the input optical signal to a second control signal;
- a controller (24) receiving the first and second control signals and generating a bias current for driving the pump source, said bias current having a value based on at least first and second components, said first component being determined by the second control signal and not the first control signal and the second component being determined by at least first control signal (col. 4).

With regard to claim 2, the feed-forward error signal is generated based on added/dropped channels, which inherently results in a change in input power (col. 4, lines 36-40).

With regard to claims 6 and 13, the pre-determined threshold is the P-control value (col. 6).

With regard to claim 3, the feedback error signal is determined by the difference between the actual output power and the desired output power (col. 4, lines 22-30).

With regard to claims 7 and 8, the amplifier is an EDFA (erbium doped fiber amplifier – as indicated in figure with Er).

With regard to claims 5, 12, 33-35, the PID controller (fig. 4) matches the temporal response of the gain control loop with the open loop gain characteristics of the amplifier via the first and second control signals (col. 5, lines 21-30).

With regard to claim 10, the portion of the output power received by the second optical power-monitoring device is a portion of the amplified optical signal (col. 4, lines 22-30).

With regard to claims 18 and 19, first and second couplers are 18 and 180, respectively.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 4 and 11 rejected under 35 U.S.C. 103(a) as being unpatentable over Drake (US 6,377,394) in view of admitted prior art (pg. 4, paragraph 0010). Drake does not specifically admit that the feedback error signal is proportional to the difference between a desired ASE and a received ASE. However, applicant's admitted prior art teaches a measure of ASE is an indirect measure of amplifier gain (lines 7-8 of

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paragraph 0010). Further, applicant admits that ASE is a natural basis of a gain control loop (last line of paragraph 0010). Consequently, It would have been obvious to one of ordinary skill in the art at the time the invention was made to use ASE measures as a means of generating a feedback error signal for a gain control loop for the advantage of an indirect measure of amplifier gain.

8. Claims 14-17, 20-22, 24, 26-29, and 30-32, are rejected under 35 U.S.C. 103(a) as being unpatentable over Drake (US 6,377,394) in view of Denkin (US 6,356,386).

With regard to claim 11, Drake does not specifically disclose a plurality of network nodes. However, Denkin teaches a plurality of optical nodes (fig. 1, 102-107), at least one optical communication link interconnecting said nodes (fig. 1, 101), at least one amplifier located along the communication link (fig. 2, 212), and an optical switch contained in each node (fig. 5B, #580). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the optical amplifier suppressing gain transients of Drake in an optical communication system for the advantage of suppressing gain transients within an optical transmission system.

With regard to claims 14-17, 20, 26-29, and 32, Drake does not specifically disclose an optical delay line for imparting a delay to an optical signal traveling there-through to match the automatic gain control loop latency. However, Drake teaches matching the temporal response of the gain control loop to the time constants of the optical amplifier via a PID controller (col. 5 and col. 6). Further, Denkin teaches the use of an optical delay element placed in the transmission path to 'permit the control signal to change at the same time as,..., the transient event' (col. 14, lines 27-30). It would

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have been obvious to one of ordinary skill in the art at the time the invention was made to use an optical delay element for the advantage of matching the temporal response of the gain control loop to the time constants of the optical amplifier.

With regard to claim 22, see rejection of claim 10.

With regard to claim 24, see rejection of claim 5.

With regard to claims 30-31, see rejection of claims 18 and 19.

9. Claims 23 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Drake (US 6,377,394) in view of admitted prior art as applied to claims 4 and 11 above, and further in view of Denkin (US 6,356,386). Drake does not specifically disclose a plurality of network nodes. However, Denkin teaches a plurality of optical nodes (fig. 1, 102-107), at least one optical communication link interconnecting said nodes (fig. 1, 101), at least one amplifier located along the communication link (fig. 2, 212), and an optical switch contained in each node (fig. 5B, #580). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the optical amplifier suppressing gain transients of Drake in an optical communication system for the advantage of suppressing gain transients within an optical transmission system.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following teach the suppression of gain transients in optical amplifiers.

US 20010043389 A1 - Bonnedal, Dag et al.
US 20020075562 A1 - Youn, Ji-Wook et al.

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US 20010040721 A1 - Gerrish, Kevin S. et al.
US 20010040720 A1 - Gerrish, Kevin S. et al.
US 20010033413 A1 - Lelic, Muhidin et al.
US 20010012148 A1 - Choi, Doe-In et al.
US 6407854 B1 - Shum, Frank
US 6396625 B1 - Nakaji, Haruo
US 6366395 B1 - Drake, Jonathan et al.
US 6366394 B1 - Begin, Michel et al.
US 6348987 B1 - Tomofuji, Hiroaki
US 5923462 A - van der Plaats, Johannes Christiaan

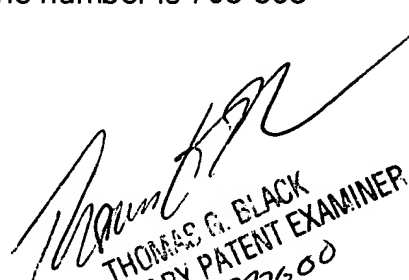
11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Deandra M Hughes whose telephone number is 703-306-4175. The examiner can normally be reached on M-F, 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Black can be reached on 703-305-9707. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9326 for regular communications and 703-872-9327 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1113.


DMH

November 17, 2002


THOMAS G. BLACK
SUPERVISORY PATENT EXAMINER
GROUP 7600